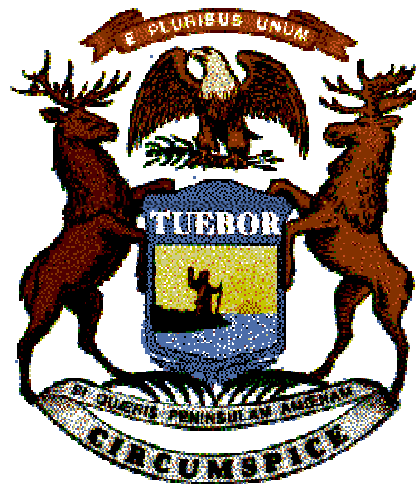


**PERSONAL PROPERTY  
ORIGINAL COST MULTIPLIERS  
DRAFT  
REPORT TO THE  
MICHIGAN  
STATE TAX COMMISSION**



**April 30, 1999**



**BDO Seidman, LLP**  
Accountants and Consultants

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# PERSONAL PROPERTY ORIGINAL COST MULTIPLIERS

## DRAFT REPORT

### TO THE

### MICHIGAN STATE TAX COMMISSION

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IMPORTANT NOTE TO THE READERS OF THIS DOCUMENT:

The authors of this report have studied the accuracy and validity of the current original cost multipliers for personal property and, as necessary, built revised or new multiplier tables for the Michigan State Tax Commission. Uniform Standards of Professional Appraisal Practice (USPAP) Standard 6 discusses models, however this assignment reaches no value conclusions. Standards 4 and 5 discuss consulting services, however this assignment meets none of the standard appraisal consulting formats described. Thus, the authors of this document believe that this study is outside the scope of the USPAP requirements.

(April 30, 1999)

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## I. INTRODUCTION

### • Purpose and Objective

The State of Michigan has utilized the Cost Approach in the mass appraisal of tangible personal property for many years. Specifically, market value is estimated beginning with the property's original historical cost, including sales tax, freight and installation. This total cost is multiplied by a composite factor. The product of these two amounts is the estimate of true cash value as defined in Section 27 (1) of the General Property Tax Act [MCL 211.27 (1)]. Michigan courts have determined that true cash value is synonymous with market value.

The composite factor is the combination of a trending factor used for the purpose of developing a reproduction cost new (RCN) and the remaining economic life percentage, commonly referred to as the percent good after the deduction for depreciation (LD). The composite factors, known as original cost multipliers, reduce the number of mathematical equations the assessor must calculate in order to arrive at an estimate of true cash value.

States and municipalities commonly use original cost multipliers. Standardized original cost multipliers are a tool and model utilized by assessors. Assessors are responsible for the assessment of thousands of properties as of December 31<sup>st</sup> of each year. A model allows the assessor to value these properties in an equitable and uniform manner. "The process of valuing a group of properties as of a given date, using standard methods, employing common data, and allowing for statistical testing" is defined as mass appraisal in the textbook titled *Glossary for Property Appraisal and Assessment* published by the International Association of Assessing Officers. Real property is valued in a similar fashion. The population of real property is assessed relying on valuation information from comparable properties. Valuation data for personal property original cost multipliers is collected from comparable properties through the use of the Income Approach, Cost Approach and Sales Comparison Approach.

Michigan law requires that properties be appraised annually. Correctly applied mass appraisal tools and models will be effective guidelines in assessing thousands of properties on an annual basis. Properties that have unique characteristics, or otherwise do not represent the model, will require the assessor to value them independently. Models and valuation tools are effective and necessary but may not accurately reflect market value for unique properties or unusual circumstances associated with a specific property.

The purpose of this study for the Michigan State Tax Commission is to review, study and analyze the current original cost multipliers. If our review reveals that the current multipliers are not substantially reflective of true cash value, as defined by law, then new original cost multiplier tables will be constructed.

### • Definition and Premise of Value

Michigan Compiled Law [MCL] 211.27, Sec.27 (1) states, "As used in this act, 'cash value' means the usual selling price at the place where the property to which the term is applied is at the time of assessment, being the price that could be obtained for the property at private sale, and not at auction sale except as otherwise provided in this section, or at forced sale. The usual selling price may include sales at public auction held by a nongovernmental agency or person when those sales have become a common method of acquisition in the jurisdiction for the class of

## I. INTRODUCTION

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property being valued. The usual selling price does not include sales at public auction where the sale is part of a liquidation of the seller's assets in a bankruptcy proceeding or where the seller is unable to use common marketing techniques to obtain the usual selling price for the property. A sale, or other disposition by the state or an agency or political subdivision of the state, of land acquired for delinquent taxes, or an appraisal made in connection with the sale or other disposition, or the value attributed to the property of regulated public utilities by a governmental regulatory agency for rate-making purposes, shall not be considered controlling evidence of true cash value for assessment purposes. In determining the value, the assessor shall also consider the advantages and disadvantages of location; quality of soil; zoning; existing use; present economic income of structures, including farm structures; present economic income of land if the land is being farmed or otherwise put to income producing use; quantity and value of standing timber; water power and privileges; and mines, minerals, quarries, or other valuable deposits known to be available in the land and their value."

### • Description of Task and Process

The project began with a planning meeting held on August 17, 1998. The meeting was attended by:

Mark A. Hilpert, Chair, Michigan State Tax Commission  
Barry J. Epstein, Ph.D., BDO Seidman, LLP  
Richard A. Southern, ASA, Applied Research Consulting  
Russell W. Hetz, Consultant  
Stewart M. Shipper, ASA, Shipper Valuation Co., Inc.  
Nick A. Khouri, Public Sector Consulting  
Brian C. Bower, BDO Seidman, LLP  
Lisa A. Hobart, ASA, PPS, BDO Seidman, LLP  
Paul A. Shanbrom, CPA, BDO Seidman, LLP

The goal of the planning meeting was to develop a project plan and methodology. The following *plan* was approved for implementation and was successfully executed.

- 1) *Define the mass appraisal problem.* The task required the study of the existing composite valuation multipliers to determine their accuracy and validity and, if necessary as a result of our study, develop multipliers that when multiplied by the original cost will result in a reliable estimate of true cash value.
- 2) *Plan the sampling methodology.* Of the seven original tables in existence, three are industry related, three are age/life based and one is property type based. The project team concluded that samples would be collected related to property type. This methodology permits a greater degree of statistical reliability.
- 3) *Identify the subject properties.* A broadbased scope of property is included in the study. Data was sought from numerous sources that are discussed in Section II.
- 4) *Begin data collection planning.* Property types were reviewed. Software requirements were analyzed and the software was purchased. Review procedures were set in place. Reports were delivered to the

## I. INTRODUCTION

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Michigan State Tax Commission every two weeks either in writing, in person or via phone.

- 5) *Apply appropriate value estimation techniques.* Valuation methodology was consistent within the project team and was applied uniformly to all samples.
- 6) *Reconciliation and finalization of composite multipliers.* The composite tables were finalized.
- 7) *Model conclusions.* Data evaluations were applied consistently and in accordance with quality control procedures that were in place throughout the project.
- 8) *The written report.* This report includes proposed composite multiplier tables based on property type. A representative list of fixed asset types and business types, where necessary, is included. Also included are valuation recommendations for reporting utility properties and cable equipment.

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## II. DATA COLLECTION

### • Sampling Methodology

Samples are a subset or portion of the total population. The population of personal property in Michigan would be difficult, if not impossible, to quantify. Personal property statements do not require that the taxpayer describe the specific property being reported. Rather, the statement only requires the year of installation, which is usually the acquisition date, the property type category and the original cost. Attempts were made to quantify varying business types for the purpose of determining if similarly situated businesses would possess similar property types. No information was discovered that permitted this type of analysis.

Market data was available for individual property types and could be analyzed to measure a percent good at a point in time. The Michigan State Tax Commission and BDO Seidman, LLP agreed to this methodology. Utility property and Cable and Television Station equipment valuation methodology is discussed in Section V.

Property types were sampled from the seven existing original cost multiplier tables. Industry and government were encouraged to submit any and all data they wanted considered for the valuation study. The project team considered the original cost and year of acquisition of the property along with valuation data relevant to the three approaches to value to be of significant importance. Three hundred four letters were mailed to taxpayers and 1,582 letters were mailed to municipalities inviting them to participate in the valuation study by submitting valuation information of assessable personal property. Telephone calls were also made to one hundred thirty-seven taxpayers and forty municipalities requesting valuation data. Of the invitations to participate, responses were received from approximately ten taxpayers and twenty-two municipalities. Of the information received, approximately 33%-50% proved useful to some degree.

Research was conducted by utilizing a variety of sources including appraisals, cost records, web sites, buyers, sellers, personal property audits, equipment users, engineers, technicians, site-inspections and others. Fixed asset data was collected and analyzed as it related to the Cost, Sales Comparison and Income Approaches to Value. Reasons that a potential datapoint would be disqualified include:

- \* Original acquisition data was for used property
- \* Description of potential comparable property did not match subject property
- \* Year of manufacture of potential comparable property was significantly different from subject property
- \* Model number of potential comparable property did not match subject property
- \* Asking price from unreliable source
- \* Auction price from unreliable source
- \* Market data was representative of sale prior to original acquisition date
- \* Insufficient description of property
- \* No comparable sale information for subject property
- \* Appraisal information without disclosure of source
- \* Asking price without disclosure of source



## II. DATA COLLECTION

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The information relating to the tables was entered into a database. Relevant valuation information included such things as property description, property category or classification, manufacturer and year of manufacture, original acquisition cost and date of acquisition, selling price and date of sale, appraisal value and date of appraisal, asking price and date of listing, and auction price and date of auction.

### • Statistical Analysis

The total population of property to be analyzed for purposes of this study is all assessable personal property in the State of Michigan. The project team endeavored to quantify that population of property. The number of assets is not required to be included on personal property statements. In fact, this information is not required to be kept or maintained by businesses. Next, the project team considered quantifying the number of personal property parcels. The number of ad valorem parcels, by class of property, is required to be reported by equalization departments to the Michigan State Tax Commission annually via form L-4022. The number of parcels ideally would assist in establishing the population of businesses by equalization classification. However, there appears to be little, if any, consistency regarding the recording of the number of parcels any particular business may have. For example, a single business may have multiple locations within a municipality and be assigned one parcel or multiple parcel numbers. Separate parcel numbers may be established for school district boundary lines. Parcels may be established for leased or rented property. The goal of determining the number of businesses within an equalization classification was to assist in developing a model of fixed assets that most likely would exist within that business. However, a vast number of Michigan businesses encompass a broad range of property types. For example, the equalization classification for industrial personal property includes businesses ranging from predominantly manual operations to state of the art, high-tech manufacturers. Given the financial and time constraints of this project, it would not be possible to query or inspect these sites for any commonality of fixed asset types.

The overall population was segmented into sub-populations according to type of property. Sample sizes within each stratified sub-population vary throughout this study. However, each sample has sufficient size, in relation to its standard deviation, to yield reliable results in excess of its criterion of error. For this purpose, the study has established a (.10) criterion or 90<sup>th</sup> percentile “confidence interval” for a false rejection or “Type One” error (rejecting the null hypothesis when it is in fact true).

Each property class’s model criterion of fit is evidenced by an array of standard parametric descriptive statistics. Specifically calculated were the mean, standard deviation and standard error, together with an array of regression modeling statistics including regression coefficient, R squared, standard error of the estimate and a one way analysis of variance (ANOVA “F”) test, to describe goodness of fit.

Due to scarcity of data in several sub-populations, no verifiable data received was rejected. The initial mailing and subsequent telephone follow-up requests for data submission were designed to generate a representative sampling of the sub-population of interest. The report writers believe participants in each segment of this population had an equal opportunity to furnish data for this study. The authors are aware of no systematic bias with respect to the reporting of the data, or of the subsequent processing of the data, and believe the data as received to be representative of the underlying population.

## II. DATA COLLECTION

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The sampling process employed by the project team sought quality valuation information for hundreds of specific property types, resulting in data points that were representative of the population.

### • Project Sources

The project team, including the subcontractors of BDO Seidman, LLP, provided the leadership and valuation skills necessary to complete the highly technical study of personal property valuation multipliers. The project team members and their qualifications are included in Section VIII of this report.

In addition to the valuation information that was submitted to BDO Seidman, LLP, either directly or via the Michigan State Tax Commission, the following reference sources were examined, reviewed and considered during the course of the study.

PUBLICATION	PUBLISHER	SYNOPSIS OF CONTENTS
Audio, The Equipment Authority	Audio Publishing 1633 Broadway New York, NY 10019	Directory of 7,000 + audio components presented by manufacturer and equipment type.
Black Book Official Auction Report	National Auto Research Division of Hearst Business Media Corp. Box 758 Gainesville, GA 30503	Comprehensive publication of the results from almost 800 major auctions. Includes detailed equipment descriptions and final selling price published in U. S. funds.
The Book, Annual Edition 1994	L & M Publications, Inc. P. O. Box 3273 Gainesville, GA 30503	Annual publication detailing the results of over 400 auctions of industrial equipment and machinery. Contents include minute particulars on the auctioned items and final selling price published in U.S. funds.
The Book, Annual Edition 1995	L & M Publications, Inc. P. O. Box 3273 Gainesville, GA 30503	Annual publication detailing the results of over 400 auctions of industrial equipment and machinery. Contents include minute particulars on the auctioned items and final selling price published in U.S. funds.
The Book, Volume I 1996	L&M Publications, Inc. P.O. Box 3273 Gainesville, GA 30503	Annual publication detailing the results of over 28 auctions of industrial equipment and machinery. Contents include minute particulars on the auctioned items and final selling price published in U.S. funds.

## II. DATA COLLECTION

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PUBLICATION	PUBLISHER	SYNOPSIS OF CONTENTS
The Book, Volume II 1996	L & M Publications, Inc. P. O. Box 3273 Gainesville, GA 30503	Annual publication detailing the results of over 340 auctions of industrial equipment and machinery. Contents include minute particulars on the auctioned items and final selling price published in U.S. funds.
Giddings & Lewis	Giddings & Lewis 142 Doty Street P. O. Box 590 Fond du Lac, WI 54936-0590	Publication presenting advanced tooling centers and emphasizing cost/benefit factors.
Green Guide Auction Report Annual Fall Edition	Primedia Information, Inc. Machinery Information Division 1735 Technology Drive Suite 410 San Jose, CA 95110	Detailed account of construction equipment transactions recorded at selected auctions worldwide. Includes a description of each auction covered, an estimate of machine condition, the selling price of each machine and any unusual facts about the machine's condition.
Industrial Market Place December 10, 1998	IMP 7842 Lincoln Avenue Skokie, IL 60077	Worldwide equipment publication linking buyers and sellers to the latest information on auctions, machinery, equipment, services and property.
Industrial Market Place February 25, 1999	IMP 7842 Lincoln Avenue Skokie, IL 60077	Worldwide equipment publication linking buyers and sellers to the latest information on auctions, machinery, equipment, services and property.
McMaster-Carr	McMaster-Carr Supply Company P. O. Box 4355 Chicago, IL 60680-4355	International publication offering pricing and descriptions on over 175,000 products.
Monthly Edition Industrial Machine Trader	Heartland Ind. Group P. O. Box 1415 Fort Dodge, IA 50501	Nationwide publication that provides buyers and sellers of industrial machinery with current new and used equipment for sale.
RS Means Electrical Cost Data	R. S. Means Company, Inc. Construction Publishers and Consultants 100 Construction Plaza P. O. Box 800 Kingston, MA 02364-0800	Publication providing the construction industry individual with the most current and comprehensive construction cost data possible.
Rotunda	Rotunda Equipment 5775 Enterprise Dr. Warren, MI 48092-3463	Comprehensive pricing publication of suggested tools and equipment, which contribute to overall dealership operating efficiency.

## II. DATA COLLECTION

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PUBLICATION	PUBLISHER	SYNOPSIS OF CONTENTS
Serial Number Reference Book for Metalworking Machinery	Hearst Business Media Corp. INM Division 29516 Southfield Road Southfield, MI 48076	Comprehensive listing of machinery and equipment by serial number and year manufactured for over 1,000 manufacturers.
Shutterbug, Special Report	Patch Publishing 5211 S. Washington Ave. Titusville, FL 32780	Monthly publication presenting new photo equipment and suggested pricing from manufacturers throughout the world.
Staples Business Advantage Office and Computer Buying Guide	Staples Business Advantage 41554 Koppemick Canton, MI 48187	Publication detailing current market prices of over 10,000 office and computer supplies offered by over 170 manufacturers.
Superior Products Mfg. Co.	Superior Products Mfg. P. O. Box 64177 St. Paul, MN 55164-0177	Nationwide publication offering current pricing on the sale of new equipment and machinery.
Top Bid – Semi Annual	Equipment World 3200 Rice Mine Rd. N.E. Tuscaloosa, AL 35406	Comprehensive guide providing timely, reliable and detailed information on new and used construction equipment, trucks and trailers from auctions around the United States, Canada, Australia, Mexico, Netherlands, Philippines and United Arab Emirates.
Top Bid – December 1998	Equipment World 3200 Rice Mine Rd. N.E. Tuscaloosa, AL 35406	Comprehensive guide providing timely, reliable and detailed information on new and used construction equipment, trucks and trailers from auctions around the United States, Canada, Australia, Mexico, Netherlands, Philippines and United Arab Emirates.

## II. DATA COLLECTION

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The following publications were also utilized as a reference or source of information:

- \* Yellow Pages telephone directory
- \* Newspapers
- \* Equipment magazines, journals
- \* Manufacturers' catalogs
- \* Michigan State Tax Commission Assessor's Manual
- \* International Association of Assessing Officers text – Property Appraisal and Assessment Administration
- \* International Association of Assessing Officers text – Assessment of Personal Property
- \* American Society of Appraisers text – Appraising Machinery and Equipment
- \* Michigan Compiled Law

For the study of utility property and equipment, the following sources were utilized:

- \* Michigan Public Service Commission Annual Reports of Major and Nonmajor Electric Utilities
- \* Michigan Public Service Commission Annual Reports of Major and Nonmajor Natural Gas Utilities
- \* Principles Course Syllabus, Appraisal for Ad Valorem Taxation of Communications, Energy and Transportation Properties, compiled by Bob McSwain, MAI, CAE, SRPA and Thomas K. Tegarden, MAI, CAE, in conjunction with the 26<sup>th</sup> Annual Wichita Program
- \* SBBI 1997 Yearbook: Valuation Edition, published by Ibbotson Associates
- \* Annual 10K Reports to the SEC

In addition to published sources, numerous contacts were made with taxpayers, equipment users, equipment buyers, engineers, technicians, equipment sellers, appraisers and referrals. One such contact was with Mr. Gregory McEachern, ASA who was extremely helpful. He shared his experiences and expertise with the project team. His efforts are greatly appreciated.

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### III. APPROACHES TO VALUE

#### • **Income Approach**

The income approach to property valuation measures a property's value by its ability to produce an income stream. The income approach is defined by the International Association of Assessing Officers in the text titled *Property Appraisal and Assessment Administration* (IAAO, Chicago, 1990) as "One of the three approaches to value, the income approach uses capitalization to convert the anticipated benefits of the ownership of property into an estimate of present value."

The International Association of Assessing Officers' textbook titled *Assessment of Personal Property* states that "the income approach produces an estimate of present worth of income to be received in the future and can be used to estimate personal property values if the assessor is able to estimate the income stream over the remaining economic life of the property being valued."

The income approach may be useful in the valuation of personal property if the income stream for the property can be determined. It may be possible to develop an income stream for leased or rented properties but this methodology is not commonly used. The reason for this is that the lease or rental agreements frequently include maintenance, supplies or other services not directly associated with the tangible personal property. Problems also exist in developing an expense ratio because the level of expenses directly related to personal property are usually not determinable as the accounting systems employed by leasing and rental companies are not required to separate those costs by individual asset.

#### • **Cost Approach**

The cost approach to property valuation is based on the assumption that the replacement or reproduction cost of a fixed asset less depreciation calculates market value. Replacement cost is the current cost of a property with the same utility as the subject property. Reproduction cost is the property's original cost trended to the date of appraisal, or the cost to build an exact replica.

Depreciation is the calculation of the loss in value to a property from all causes. The three forms of depreciation are physical, functional and external. Physical depreciation is wear and tear, damage, breakage and normal disintegration. It may be curable or incurable.

Functional obsolescence is the loss in value to a property as a result of a change in the capabilities of similar properties in the market. A change in the design of a machine, product preferences and technological enhancements may result in rendering the subject inadequate and costly to operate. Functional obsolescence may be curable or incurable.

External obsolescence is the loss in value to a property from influences and factors outside of the property. External obsolescence is usually incurable and may exist in a property as a result of laws and regulations that have been imposed.

### III. APPROACHES TO VALUE

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- **Sales Comparison Approach**

The sales comparison approach uses sales and market based information of similar properties as a measure of value of the subject property. This approach relies on the principle of substitution. The International Association of Assessing Officers textbook titled *Assessment of Personal Property* states “that a prudent investor will pay no more for Property Unit A than it would cost to build or acquire similar Property Unit B, assuming A and B to be similar in age, cost, size, utility and condition.”

The sales comparison approach adjusts the prices of properties that have recently sold, or are available for sale, to reflect the same or similar characteristics of the subject. Such adjustments may be for time differences, location and functional capabilities.

- **Correlation of Value**

The three approaches to value are considered and reviewed for reliability as indications of the property market value. In estimating the property value, the appraiser relies on the appraisal Principle of Substitution. The International Association of Assessing Officers text titled *Glossary for Property Appraisal and Assessment* defined the Principle of Substitution as “The appraisal principle that states that a potential owner will pay no more for a property than the amount for which a property of like utility may be purchased; that a property’s value tends to be set by the cost of acquiring an equally desirable substitute.” Specific criteria considered are the availability of reliable and relevant data for each approach and the strengths and weaknesses inherent in each approach to value. When proposed values are estimated using more than one approach to value, appraisal theory recommends that the approaches to value be correlated in reaching a valuation estimate.

It is not always necessary, possible or practical to apply the three approaches to value when valuing fixed assets. Valuation data may not exist or may be unreliable for all three approaches to value to be calculated.

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## IV. VALUATION ANALYSIS

### • Property Types

Property types were stratified into categories for purposes of studying the composite multipliers. The stratification included the following categories:

- \*Cable Equipment
- \*Computer & Peripheral Equipment
- \*Improvements
- \*Machinery & Equipment
- \*Computer Controlled Machinery & Equipment
- \*Furniture & Fixtures
- \*Office Machines
- \*Electronic, Video & Test Equipment
- \*Restaurant Equipment
- \*Consumer – Coin Operated Equipment
- \*Consumer – Utilized Equipment

### • Data Characteristics

For each item from the population of property, certain characteristics were recorded. These characteristics included manufacturer, model type and number, property description, sale date, sale price, auction date, auction price, asking date, asking price, acquisition date, acquisition cost, appraisal date and appraisal value. All available data was collected, verified, analyzed and considered for inclusion into the study.

### • Data Verification

Data was collected from available market sources. Adjustments were made as necessary to reflect the level of trade consistent with the purpose of the report. The accuracy and validity of the data was verified directly with property owners and through internal methods. Internal methods included phone calls to confirm various components of the data characteristics and a process of developing comparable properties for consistency and reasonableness.

### • Unique Valuation Properties

Appraisal relies in part, on the principle of *Highest and Best Use* which is defined in the American Society of Appraisers' text titled *Appraising Machinery and Equipment* as "that use of the subject machinery and equipment which may reasonably be expected to produce the greatest net return over a given period of time, that legal use which will yield the highest present value." Generally, personal property is at its *highest and best use* if it is currently being used for the purpose for which it was built, intended and designed. Michigan Compiled Law Section 211.2(2) states "The taxable status of persons and real and personal property for a tax year shall be determined as of each December 31 of the immediately preceding year..." Therefore, it must be determined by the assessing officer if property is situated at its *highest and best use* as of December 31 each year. Personal property, which is under construction, idle, obsolete or surplus, may not be at its *highest and best use*. The Michigan State Tax Commission defines



#### IV. VALUATION ANALYSIS

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these terms and offers a methodology for valuation in Chapter 15 of the text titled *Assessor's Manual* as follows:

**Construction in Progress:** All machinery and tools being installed or constructed on tax day should be reported to the assessor at 100% of original costs. The assessor should then deduct a construction-in-progress allowance of 50% to arrive at the true cash value estimate.

On the tax day on which construction is complete, the total costs including freight, installation and sales tax must then be reported in the year of completion even though they were incurred over several years. The assessor then begins to value the machinery and/or tools using the original cost multipliers. The year of completion becomes the year of purchase for valuation purposes.

**Idle Equipment:** Idle equipment is equipment that has been disconnected and is stored in a separate location. This equipment is not part of the existing process, not even on a standby basis.

Sometimes, equipment may be “idle-in-place” because storage in a separate location is not feasible. This could be due to the large size of the equipment involved or the fact that it is underground equipment. Proof should be presented to the assessor that equipment is “idle-in-place.”

Idle equipment should be reduced to half of the value obtained by applying the normal personal property multipliers to original acquisition costs.

Sometimes equipment, for various reasons, is normally not used throughout the year (e.g., Christmas decorations, construction equipment). This type of equipment does not qualify for the idle equipment allowance when it is only seasonally used.

**Obsolete or Surplus Equipment:** Obsolete or surplus equipment which either: (1) requires rebuilding for continued economic use and is in the possession of a machine rebuilding firm on tax day, or (2) has been declared as surplus by an owner who is abandoning a process or plant and is being disposed of by means of an advertised sale or through an agent. The economic residual value of obsolete or surplus equipment is estimated to be 50% less than if it were valued as idle equipment.

The valuation techniques that are prescribed by the Michigan State Tax Commission adjust the *true cash value* downward. Theoretically, they are providing a uniform methodology for calculating additional depreciation since the property is not at its *highest and best use*. The origin of these calculations is unknown. This additional depreciation cannot be readily determined from the marketplace, as most personal property is not transferred in a similar condition. Therefore, the uniform methodology is a form or type of allowance intended to acknowledge that property which is under construction, idle, surplus or obsolete is not at its *highest and best use*.

It is possible that assessing officers could inspect individual properties to estimate the percentage of completion for construction in progress. The same examination would be unlikely to provide

#### IV. VALUATION ANALYSIS

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an improved estimate of value for idle, surplus or obsolete equipment. Therefore, no change is recommended in these categories.

- **Assessable Tools, Dies, Jigs, Fixtures, Molds, Patterns and Gauges**

Chapter 15 of the Michigan State Tax Commission Assessor's Manual states "those tools, dies, jigs, fixtures, molds, patterns and gauges which are being amortized and are not exempt as 'special tools' by MCL 211.9b should be reported on the personal property form at book value. Book value is accepted as true cash value for these specific items and no further depreciation is applied. Tools usually carried in inventory and supplies must also be reported. The term 'tools' as used in this paragraph usually means small hand tools." The current valuation methodology recommends that assessors use net book value as true cash value. Net book value is equal to the cost of an asset less the accumulated depreciation for that asset. The Michigan State Tax Commission recommendation of the valuation methodology recognizes that the property's value is directly associated with its economic life. The economic life of assessable tools, dies, jigs, fixtures, molds, patterns and gauges will vary greatly depending on the product they are designed to manufacture. Some items, such as household goods may not have significant changes in design as compared to industrial products.

Both cost and depreciation may vary depending on the type of accounting records that the assessor is examining. Accounting for financial reporting may be different than accounting for tax. Consequently, the net book value of the asset may differ. It is not possible to determine from the marketplace or to predict the actual economic life for assessable tools, dies, jigs, fixtures, molds, patterns and gauges, nor would it be advisable to select the specific accounting records for the calculation of net book value. Given these limitations, it is recommended that the Michigan State Tax Commission adopt a standardized economic life for all assessable tools, dies, jigs, fixtures, molds, patterns and gauges.

Special tools are specifically exempted from taxation. They are defined in Rule 21 of the Michigan State Tax Commission General Rules as "...those finished or unfinished devices, such as dies, jigs, fixtures, molds, patterns and special gauges, used or being prepared for use in the manufacturing function for which they are designed or are acquired or made for the production of products or models and are of such specialized nature that their utility and amortization cease with the discontinuance of such products or models."

- **Construction Equipment**

Chapter 15 of the Michigan Assessor's Manual recommends Table 5 titled "Short-Lived" for the valuation of construction equipment. Specifically, Chapter 15 states that "construction equipment is in the short-lived category only when major repairs are also reported as assets on the personal property statement."

The study of construction equipment utilized original historical cost exclusive of any repair costs. Sales data reflects transactions of property in a repaired state or usable condition. Construction equipment suffers considerable wear and tear and is frequently exposed to harsh elements. It is expected that construction equipment will be routinely repaired to achieve its expected economic life. Therefore, it will not be necessary to adjust for repair expenses when utilizing the proposed original cost multiplier schedules.

##### • Repairs & Maintenance

Chapter 15 of the Michigan State Tax Commission Assessor's Manual states on page 15-4 that "An expenditure on existing plant assets can be either an expense or a capital expenditure. It is an expense if it only helps to generate current revenues rather than future periods' revenues, e.g., lubricating a machine, replacing a fan belt. It is a capital expenditure if it benefits future periods' revenue either by increasing the quality of services obtained from the asset or extending the quantity of services, i.e., the life of the machine. The cost of capital expenditures should be reported on the personal property statement. It may also be necessary to adjust the original acquisition cost of an asset when capital expenditures are made on it. Thus, if 25% of a machine acquired in 1975 is rebuilt in 1991, 25% should be deducted from the 1975 acquisition cost."

Repairs and maintenance expenses are necessary costs to keep personal property in operating condition. Expenses of this type are necessary due to the physical wear and tear of the property. The Michigan State Tax Commission's valuation recommendation for capital expenditures adjusts the cost of the asset where the expenditure is considered to have extended the life of the property. Similar estimates of value are achieved by adjusting the original cost multiplier. The data used in this original cost multiplier study reflects properties that are in a repaired state or usable condition. Since the proposed multipliers assume that the property has received routine repairs and maintenance, an adjustment to the original cost in the installation year is not necessary. Expenditures that, regardless of the accounting treatment by the taxpayer, only keep the property functional for its anticipated life should not be adjustments to original cost and should not be assessable in the year incurred. The original historical cost and year of acquisition should continue to be reported. However, it is recommended that costs for improvements and/or upgrades of a capital nature remain assessable personal property in the year of installation.

For example, if a machine part were replaced with a part of similar utility, the replacement part cost would not be reported on the personal property statement. If however, the capital expenditure was for an upgrade and/or improvement (i.e., the replacement of a CNC component with an upgraded component), the upgrade and/or improvement cost would be properly reported in the year for which the cost was incurred and an adjustment should be made to the original historical cost for the cost of the property that was replaced.

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## V. MULTIPLIER METHODOLOGY

### • Utility Valuation

A common approach to public utility valuation is the unit valuation method and the properties are generally centrally assessed. This methodology captures the value of an entire company as a going concern and includes the value of real and personal tangible property as well as any intangible values. We understand that, for a variety of reasons, central assessment is not currently a viable alternative in Michigan for the assessment of public utility property.

To support the local assessment of regulated public utility personal property, it is necessary to develop a methodology for determining the fair market value of that property at a point in time, specifically at the December 31 annual assessment date. A common practice that purports to determine market value uses both the income approach and the cost approach. In the income approach, the level of income is determined by multiplying the regulatory rate base by the allowable rate of return permitted by the appropriate regulatory body. This income level is then converted to an indication of market value by dividing it by the rate of return that it is assumed an investor would require. The market rates that it is assumed an investor would require are generally determined by the application of the risk premium method and the capital asset pricing model.

There are a number of issues regarding the assumptions or methodologies employed in the typical valuation study done for public utility property. These would include, but not be limited to the following:

- Many of the rates used to determine the required rate of return are from the utility conglomerate and these rates cannot necessarily be transported to the regulated public utility portion of the conglomerate. The conglomerate may include businesses that do not operate in a regulated environment and therefore may have different risks than their regulated subsidiaries or divisions.
- The capital structures used to calculate both the allowable rate of return and the required rate of return are often identical. The capital structure used for the weighting in the required rate of return should reflect how a prospective buyer would finance the purchase. This would not necessarily be the same financial structure as exists at the utility being valued.
- With respect to the capital asset pricing model that is generally used to calculate the equity cost of capital for the required rate of return, we take issue with the following:
  - \* The model uses Beta to adjust for the risk differential between the average common stock in the market and the common stock of a regulated public utility. However, Beta is a measure of variability that is different than risk. The Value Line Investment Survey warns investors not to use Beta as a measure of risk as no more than 40% of risk in the average stock is attributable to Beta. Beta measures a stock's relative volatility in relation to the market as a whole. Stocks with Betas greater than 1.0 tend to amplify the overall movement of the

market while stocks with positive Betas less than 1.0 do not move as far as the market.

- \* The risk premium for holding stocks is assumed to represent the additional percentage points of return investors have required, on average over time, to hold stocks instead of Treasury bills. However, the risk premium is actually based on the returns that investors have received not the returns they have sought. During the 1970's, stocks did not appreciate greatly and therefore most of the return received by investors was in the form of dividends. The dividend rates often averaged less than the rates being paid on Treasury bills.
- \* The equity risk premium used in the model is generally added to the long term government bond rate but the Ibbotson study, which is often the source of this data, is based on the spread between the Treasury bill rate. The rate differential between the Treasury bill rate and that of the 30-year government bond can exceed a full percentage point.

While this methodology is not without its shortcomings, our calculations show that the adjustments for the above items do not materially alter the results. They arrive at purported market values that are very close to the regulatory rate base calculated by using original acquisition cost with depreciation based on regulatory service lives. Given the political constraint against using unit valuation as centrally assessed properties, we concluded that the use of the rate base calculated for the Michigan Public Service Commission ("MPSC") for rate making purposes is the best proxy and least arbitrary approximation of market value for the regulated personal property involved in this project (assets currently valued using Tables 1, 2 and 2a).

This recommendation would require a change to the personal property statements currently filed by the public utilities. Rather than reporting original acquisition cost by year of acquisition, the new format would require reporting original acquisition cost, allowable depreciation reserve and the regulatory rate base that is the difference between the two. BDO Seidman, LLP also recommends that the public utilities provide the Michigan State Tax Commission with an annual reconciliation of the personal property reported to local jurisdictions with their total rate base. This would include identifying non-reported property and the reason for non-reporting.

A review of the gas plant in service and electric plant in service portions of the reports filed with the MPSC indicate that there could be some inconsistency as to what is reported as personal property vs. what is being assessed, or should be assessed as real property. BDO Seidman, LLP recommends that a study be conducted to determine personal property reporting practices and real property assessment practices. This would provide guidelines that would result in consistency in reporting in future years.

With regard to pipeline companies that do not file FERC reports, we recommend that they continue to use the same table for which they were previously assessed to value their personal property assets. Tables 2 and 2a should continue to be utilized to value the pipeline personal property of non-regulated pipeline companies.

It is understood that the use of regulatory net book value may not always provide an exact proxy for market value for public utility personal property. However, the alternative of using an arbitrarily established set of original cost multipliers may not provide any more accurate of an

estimate of the market value of this property. The dearth of sales of the individual personal property assets under consideration provides no meaningful correlation between original acquisition cost by year of acquisition and market value. The attempts to develop original cost multipliers by year of acquisition are subjective exercises at best. This lack of market sales also provides no confirmation of the values derived from the use of the income approach.

### • Cable Television Systems

Chapter 15 of the Michigan State Tax Commission's Assessor's Manual provides a brief description of cable television and a general reference to the real vs. personal property nature of the assets. The following material will discuss the operating characteristics of cable television, the equipment used and the service life and percent good of the various assets.

Cable television systems distribute television, radio and data from a central location to the paying subscribers. There are three main operational components that combine to create a cable television system: headend, distribution and converters. The headend is the control center of the system. It receives incoming signals from satellites, television antennas and locally produced programs. It then amplifies, converts, processes, combines and transmits the signals through a cable network to subscribers. The headend includes processors, modulators/demodulators, satellite receivers, scramblers, TV antennas, microwave receiving and transmission equipment, combining equipment and local origination equipment.

The distribution system has three main components, a trunk line system, feeder line system and drop lines (aerial or underground). The first segment, the trunk line system, connects the headend to the first bridging amplifiers. Trunk lines can also include power supplies and other electronic components. The feeder system carries signals to individual neighborhoods. The drop line part of the distribution network connects individual subscriber locations to the feeder trunk. Historically, the cable was coaxial but the current trend is to use fiber optic cable that has very high bandwidth and allows cable systems to offer increased services such as pay-per-view programming and more channels than are available using coaxial cable. The switch to fiber optic cable has greatly increased the functional obsolescence of coaxial cable.

Cable television converters receive the signals sent through the coaxial or fiber optic cables. They are converted or unscrambled if necessary and then sent to channels that a television receiver can tune to. The general trend in converters is toward expanding both the number of channels and the availability of services.

The cable television business is a very competitive one, which finds itself technology driven. Each major company is trying to gain competitive advantage through increased market share and uses new technology to further this goal. Technological changes include the transition from vacuum tubes to transistors to integrated circuits and the shift from coaxial cable to fiber optic cable. Competitive pressures include the need for more channels to offer increased program selection and the offering of pay-per-view programming. The result of technology and competitive pressure is that the equipment and plant become functionally obsolete well before the equipment and plant need to be retired because of physical wear. Every category of a cable television system (headend electronics, distribution cable, subscriber drops and converters) is subject to this technology and competitive pressure. Substantial amounts of functional obsolescence may result.

A study was conducted that developed useful life and condition percent parameters for cable television assets. The study was broken into three parts covering the three main operational

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components of a cable television system: headend, distribution and converters. The study recommended, and BDO Seidman, LLP concurs with (except for local origination equipment and converters), the following service lives for cable system assets:

<u>Category of Plant/Equipment</u>	<u>Recommended Service Life</u>
<b>Headend Equipment:</b>	
Basic headend electronics	9.5
Microwave transmission/receiving equipment	8.0
<b>Distribution Plant:</b>	
Aerial cable-excluding electronics	12.5
Underground cable-excluding electronics	10.0
Aerial cable-distribution electronics	9.5
Underground cable-distribution electronics	7.0
Subscriber drops	9.0
Fiber optic cable-excluding electronics	15.0
Fiber optic electronics	8.0

Based on the condition percent (percent good) tables that correspond to the recommended service lives, we recommend that three new multiplier tables be created for cable personal property assets. The three tables are identified as Table A, B and C on page 32. Table A includes headend equipment, underground cable (excluding electronics), aerial cable distribution electronics and subscriber drops. Table B includes microwave transmission/receiving equipment, underground cable distribution electronics and fiber optic cable electronics. Table C includes fiber optic cable (excluding electronics) and aerial cable (excluding electronics). Converters would be reported in the Computer & Peripheral Equipment category. Local origination equipment should be reported in the Electronic, Video & Test Equipment category.

Because of the continued technological developments in the industry, the constant consumer demand for increased program selection and the new product offerings by cable systems, these service life estimates may be on the long side and should be continuously reviewed.

### • Television Station Equipment

With the exception of broadcast towers, television station equipment closely resembles the local origination equipment in the cable television study. The assets consist of cameras, film chains, video tape recorders, color monitors, remote location equipment, character generators, recorders/editors and mobile production equipment. The majority of this equipment is subject to high degrees of technological change and design improvement. The trend has been toward equipment with more features and lower prices than the equipment being replaced.

Based on our analysis, we recommend the same treatment as the local origination equipment in the cable industry. This equipment should be reported on the Electronic, Video & Test Equipment table. The broadcast towers determined to be personal property should be reported on the Machinery & Equipment table. Any equipment that replicates that of the cable industry should be reported using the same tables as used by the cable television systems.

- **Personal Property (Remaining Assessable Property)**

Verified valuation data was arrayed and plotted on a graph for each property category. The property categories are listed in Section IV. Each data point identifies the age and percent good of a sample at a specific point in time. Skilled professionals in mathematics and statistics reviewed the results. They measured the confidence level, provided input as necessary and confirmed results.

Mathematical and statistical professionals reviewed the results of the datapoints. Once again the confidence level was measured, input was provided as necessary, and the results confirmed.

Each Proposed Original Cost Multiplier Table includes a variety of property types as listed below:

The Cable Equipment category includes such items as:

- \* Headend equipment such as:
  - Basic headend electronics
    - Antennas
    - Demodulators
    - Modulators
    - Processors
    - Satellite receivers
    - Scramblers
  - Microwave transmission/receiving equipment
  - Combining equipment
- \* Distribution equipment such as:
  - Aerial cable-excluding electronics
  - Underground cable-excluding electronics
  - Aerial cable-distribution electronics
  - Underground cable-distribution electronics
  - Subscriber drops
  - Aerial cable-including electronics
  - Fiber optic cable-excluding electronics
  - Fiber optic electronics
  - Fiber optic cable-including electronics
  - Reused conduit

The Computer & Peripheral Equipment category includes such items as:

- \* Personal computers
- \* Midrange computers such as:
  - Data storage devices
  - Hubs
  - Servers
  - Workstations
- \* Mainframe computers such as:
  - Central processing units
  - Terminals
  - Workstations
- \* Peripheral equipment such as:
  - Digital cameras



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- Plotters
- Printers
- Scanners
- Data storage devices
- Modems
- Monitors
- Networking equipment
- Additional computer related peripheral equipment
- \* Point-of-sale equipment (computerized) such as:
  - Scanners
  - Scales
  - Keyboards
  - Computers
  - Display screens
  - Debit/credit card readers
  - Check swipes
  - Printers
  - Theatre ticket sales systems
  - Delivery service tracking equipment (scanner/code keypunch)
- \* Global positioning system equipment
- \* Lottery ticket terminals
- \* Gambling tote equipment
- \* Cable television converters

The Improvements category includes such items as:

- \* Air handling/conditioning equipment
- \* Awnings
- \* Built-in fixtures such as:
  - Cubicles and desks
  - Dance studio flooring
  - Computer/communications room flooring and air conditioning
  - Mirrors
  - Wells
- \* Cabinets and shelving
- \* Canopies
- \* Floor covering
- \* Lighting
- \* Machinery foundations, pits and electrical connections
- \* Modular offices
- \* Public address/intercom systems
- \* Security/alarm systems

The Machinery & Equipment category includes such items as:

- \* Agricultural equipment such as tractors and harvesting equipment
- \* Air compressors
- \* Airport ground equipment (unlicensed)
- \* Amusement park, water park and fair machinery and equipment such as:
  - Concession booths
  - Rides

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- Ticket booths
- \* Auto repair, service station, gas station and oil change equipment such as:
  - Brake lathes
  - Lifts and hoists
  - Lube equipment
  - Parts cleaners
  - Pumps and hoses
  - Tanks
  - Tire machines and wheel balancing and alignment machines
- \* Batting cage equipment
- \* Beauty and barber shop equipment such as hair dryers, etc.
- \* Blast furnaces
- \* Boilers
- \* Bottling and canning equipment such as:
  - Bottle cleaners and washers
  - Cappers and cap tighteners
  - Case erectors, packers and sealers
  - Labelers and label dispensers
  - Can loaders, unloaders and openers
  - Fillers
- \* Bridge cranes and hoists
- \* Car wash equipment such as:
  - Drying/blower equipment
  - Electric pump operated washing systems
  - Pumps and tanks
  - Vehicle conveyers
  - Water recycling systems
- \* Chemical processing equipment such as:
  - Mixing and blending equipment
  - Hoppers
  - Pumps
  - Tanks
- \* Communication towers and antennas
- \* Construction equipment such as:
  - Asphalt paving equipment such as plants, distributors and pavers
  - Backhoes and excavators
  - Barricades, warning signs, etc.
  - Boom and bucket trucks
  - Brooms, plows and sweepers
  - Bulldozers
  - Compactors and rollers
  - Concrete batch plants, pumps and pavers
  - Cranes
  - Dredging equipment
  - Forklifts, scissor lifts and aerial lifts
  - Gang and tool boxes
  - Generators, power units and light plants
  - Graders and scrapers
  - Loaders
  - Pipelayers
  - Pulverizers and mixers

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- Tank trucks and spreaders
- Tools
- Tractors
- Trailers (unlicensed)
- Trenchers, boring machines, cable plows and ditch diggers
- Unlicensed motor vehicles

- \* Conveyor systems

- \* Dry cleaning and laundry equipment such as:

- Clothes conveyors
  - Dry cleaning and laundry machines
  - Presses

- \* Exhaust systems

- \* Eyeglass manufacturing equipment such as:

- Blocking machines
  - Edging and grooving machines
  - Frame warmers
  - Layout machines
  - Surfacing machines
  - Tinting machines

- \* Fabricated manufacturing equipment such as:

- Bar feeds, peelers and straighteners
  - Bending machines
  - Bevelers, chuckers, crimpers and deburrers
  - Drilling and tapping machines
  - Extruders
  - Gear hobbers, shapers and testers
  - Grinders
  - Iron workers
  - Lapping machines
  - Lathes
  - Mills
  - Presses
  - Press brakes
  - Punches
  - Saws
  - Screw machines
  - Shears and cutters
  - Tube benders, formers and mills
  - Welders and torches

- \* Food processing equipment such as:

- Peelers and corers
  - Bean graders and snippers
  - Corn cutters and huskers
  - Destoners
  - Extruders
  - Hot water blanchers
  - Juice extractors
  - Rotating feeders
  - Potato chip fryers
  - Slicers

- \* Glass product manufacturing equipment such as:

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- Extruders
- Glass presses
- Glass furnaces
- Sand blasting machines
- Straight bevellers
- Straight edgers
- \* Gym or exercise equipment such as:
  - Non-automated treadmills, exercise cycles and stair climbers
  - Stack weight machines
- \* Heat treatment machinery such as:
  - Furnaces and ovens
- \* Incinerators
- \* Jewelry and gem manufacturing equipment such as:
  - Hand drills
  - Polishing equipment
  - Safes
- \* Landscaping and golf course equipment such as:
  - Aerators
  - Brush chippers
  - Edgers and trimmers
  - Golf carts
  - Miniature golf course fixtures and equipment
  - Mowers
  - Power rakes
  - Stump grinders
  - Tillers
- \* Logging and saw mill equipment such as:
  - Bandmills
  - Chippers
  - Debarkers
  - Feller bunchers
  - Forwarders
  - Hogs and husks
  - Log loaders
  - Log tumers
  - Saws
  - Skidders
  - Stackers and sorters
  - Tree shears and trimmers
  - Yarders
- \* Maintenance and janitorial equipment such as:
  - Floor scrubbers, buffers and power sweepers
  - Cleaning and polishing equipment
  - Vacuums
- \* Medical, dental, laboratory and veterinary equipment such as:
  - Dental lathes
  - Instruments
  - Lights
  - Model trimmers
  - Sterilizers
  - X-ray developers

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- \* Mining, quarrying and aggregate processing equipment such as:
  - Conveyors and feeders
  - Crushers
  - Hoppers
  - Loaders and stackers
  - Screening plants
- \* Mortuary and cemetery equipment
- \* Painting equipment such as:
  - Paint booths
  - Spray equipment
- \* Petroleum, gas and propane production and distribution equipment such as:
  - Refining plants
  - Storage facilities
- \* Plastics manufacturing equipment such as:
  - Chillers
  - Injection molding machines (manual)
  - Molding machines
- \* Pottery and ceramic equipment such as kilns, etc.
- \* Printing and newspaper equipment (manual) such as:
  - Binding machines
  - Collating machines
  - Contact and vacuum frames
  - Folding machines
  - Image setters
  - Ink mixers
  - Joggers
  - Labeling machines
  - Laminators
  - Paper shears
  - Plate makers, stat cameras and processors
  - Plate punches
  - Perforators
  - Presses (non – automated)
  - Stitching machines
- \* Rubber manufacturing equipment such as:
  - Calenders
  - Extruders
  - Heating platens
  - Injection presses
  - Kneaders
  - Mixing mills
  - Rotary cutters
  - Rubber creepers, shredders, baling presses, dryers and slab cutters
  - Separators
- \* Scales
- \* Ski lift machinery and equipment
- \* Smelting equipment
- \* Stone and clay product manufacturing equipment such as:
  - Block cutting machines
  - Diamond wire machines
  - Gang saws

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- Head cutting machines
- Rock drills
- Stone grinders and polishers
- Stone routers
- \* Supermarket equipment such as:
  - Dairy cases
  - Meat cases
  - Produce cases
  - Frozen product cases
- \* Tanning beds and booths
- \* Textile manufacturing equipment such as:
  - Carding and combing machines
  - Cleaning and micro dust extracting machines
  - Dryers
  - Dye machines
  - Extractors
  - Frame machines
  - Sewing machines
  - Textile printers
  - Weaving and knitting machines
- \* Theater equipment such as:
  - Film projectors and platters
  - Projection screens
- \* Vehicle mounted equipment such as:
  - Aerial lifts and telescopic booms and buckets
  - Cable handlers and reel lifters
  - Digger derricks
- \* Waste and trash containers, compactors and recycling equipment
- \* Wire product manufacturing equipment such as:
  - Measure, cut and strip machines
  - Spoolers
  - Straighteners
  - Wire cutters
- \* Woodworking equipment such as:
  - Chippers and grinders
  - Clamps
  - Dust collectors
  - Glue applicators and spreaders
  - Jointers
  - Lathes
  - Mortisers and moulders
  - Planers
  - Routers and shapers
  - Sanders
  - Table saws
  - Wood presses

The Computer Controlled Machinery & Equipment category includes machinery and equipment that are computer controlled and/or have computer and software components. This category may include machinery and equipment listed under another category if the property has computer and software components. Property in this category may commonly possess

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programmable features and software that can be upgraded or is interchangeable. Computer Controlled Machinery & Equipment includes such items as:

- \* Automated teller bank machines (ATM)
- \* Automated car wash equipment
- \* Automotive diagnostic equipment (computerized) such as:
  - Analyzers
  - Dynamometers
  - Scopes
- \* Computer controlled bowling and automatic scoring equipment
- \* Computer controlled lighting
- \* Computer numeric controlled (CNC) or computerized manufacturing equipment such as:
  - Drill presses
  - Electrical discharge machines (EDM)
  - Fabricators
  - Gear hobbing machines
  - Grinders
  - Lathes
  - Machining centers
  - Mills
  - Presses
  - Press brakes
  - Profilers
  - Punches
  - Screw machines
  - Turning centers
- \* Exercise equipment – computerized such as:
  - Treadmills, exercise cycles and stair climbers
  - Automated weight machines
- \* Medical, dental, hospital or veterinary equipment – computer controlled, such as:
  - Ultrasound equipment
  - Magnetic resonance imaging (MRI) equipment
  - CAT scans
  - Laser equipment
- \* Printing equipment – computer controlled such as:
  - Printing presses and laminators
- \* Robotics
- \* Telephone systems with voicemail and/or other software packages
- \* Textile manufacturing equipment – computerized
- \* Theatre equipment which is computer controlled such as:
  - Automated film projectors

The Furniture & Fixtures category includes such items as:

- \* Animal cages
- \* Artwork and decorations
- \* Auditorium/theatre seating
- \* Beauty and barbershop furniture and fixtures such as:
  - Chairs
  - Cabinets, counters and mirrors
  - Shampoo bowls

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- \* Benches and bleachers
- \* Billiard and pool tables
- \* Childcare/daycare furniture, toys and implements
- \* Hotel, motel, resort and model home or apartment furnishings such as:
  - Beds and dressers
  - Reception desks
  - Sofas and chairs
  - Tables
- \* Libraries
- \* Lockers
- \* Mobile office trailers
- \* Modular offices or rooms
- \* Office furniture and fixtures such as:
  - File cabinets, filing systems and storage cabinets
  - Desks, credenzas, hutches, bookcases, tables and chairs
  - Cubicles and partitions
  - Coat racks
- \* Medical furniture and fixtures such as:
  - Exam tables, tables, chairs and stools
  - Light boxes
  - Cabinets, counters and sinks
- \* Podiums, portable stages, stands and risers
- \* Restaurant furniture and fixtures such as:
  - Booths, bars, counters and tables
  - Chairs and stools
  - Sinks
- \* Retail furniture and fixtures such as:
  - Display cases, racks and shelving
  - Counters and tables
  - Shopping carts
  - Slatwall
- \* Signs, billboards and menu boards
- \* Uniforms, linens, glassware and silverware
- \* Window treatments such as blinds, draperies and shades

The Office Machines category includes such items as:

- \* Binding machines
- \* Calculators
- \* Cash registers
- \* Copiers
- \* Faxes
- \* Mailing machines and postage scales
- \* Photography and developing equipment such as:
  - Cameras and lenses
  - Developing equipment
  - Drying cabinets and dryers
  - Enlargers
  - Light boxes and tables
- \* Shredders
- \* Slide and overhead projectors



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- \* Telephone and telephone system equipment such as:
  - Phones
  - Switchboard equipment
- \* Typewriters

The Electronic, Video & Test Equipment category includes items containing electronic components such as:

- \* Audio production and broadcast equipment such as:
  - Amplifiers
  - Cassette decks
  - CD, DVD and laser disc players
  - Decoders
  - Digital players and recorders
  - Equalizers
  - Mixing and editing equipment
  - Recording equipment
  - Receivers
  - Signal, surround sound and ambience processors
  - Speakers
  - Studio transmitting and receiving equipment
  - Tuners
- \* Automotive electronic diagnostic equipment such as:
  - Scopes and analyzers
- \* Cable television local origination equipment
- \* Cellular telephones and pagers
- \* Electronic surveillance equipment
- \* Electronic scales
- \* Medical, hospital and dental laboratory and electronic diagnostic and testing equipment such as:
  - Blood analyzers
  - Centrifuges
  - EKGs
  - Microscopes
  - X-ray and radiology equipment
- \* Ophthalmology testing equipment such as:
  - Keratometers
  - Refractors
  - Retinal cameras
  - Tonometers
- \* Photo processing and enlarging equipment such as:
  - Automated film processors
  - Photo copying and enlarging systems
- \* Satellite dishes and receiving equipment
- \* Testing and laboratory equipment such as:
  - Coordinate measuring machines
  - Multimeters, ammeters and voltmeters
  - Optical comparators
  - Oscilloscopes
  - Spectrographic analyzers
- \* Video, motion picture, television production and broadcast equipment such as:

## V. MULTIPLIER METHODOLOGY

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Cameras  
Character generators  
Film chains  
Recording and editing equipment  
Studio broadcasting equipment  
Televisions and monitors  
Video cassette recorders  
Video duplicating and editing equipment

The Restaurant Equipment category includes such items as:

- \* Beverage dispensers
- \* Blenders
- \* Buffet tables
- \* Bun warmers
- \* Coffee makers
- \* Condiment stands
- \* Dish washers, glass washers and garbage disposals
- \* Exhaust hoods
- \* Food display cases (refrigerated and/or heated)
- \* Food preparation counters/stations (refrigerated and/or heated)
- \* Freezers
- \* Fryers
- \* Grills
- \* Hot plates, soup warmers and bread warmers
- \* Ice machines
- \* Ice cream and milk shake machines
- \* Microwaves
- \* Mixers and blenders
- \* Ovens, ranges and grills
- \* Refrigerators and coolers
- \* Sinks
- \* Slicers
- \* Stainless steel tables
- \* Steam tables
- \* Walk-in coolers and freezers

The Consumer-Coin Operated Equipment category includes such items as:

- \* Coin-operated devices such as:
  - Bill change machines
  - Cigarette machines
  - Juke boxes
  - Pinball machines and coin-operated video games
  - Snack and beverage machines
  - Other vending machines
- \* Laundry equipment such as washers and dryers
- \* Newsboxes

The Consumer-Utilized Equipment category includes such items as:

## **V. MULTIPLIER METHODOLOGY**

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- \* Video games
- \* Video tapes (VCR, DVD and laser disc)

## VI. PROPOSED ORIGINAL COST MULTIPLIER SCHEDULES

### • CABLE EQUIPMENT

TABLE	A	B	C
AGE	% GOOD	% GOOD	% GOOD
1	89%	87%	93%
2	80%	75%	86%
3	70%	63%	79%
4	61%	52%	72%
5	51%	41%	66%
6	43%	33%	59%
7	35%	24%	53%
8	29%	18%	47%
9	23%	13%	42%
10	18%	9%	36%
11	14%	6%	31%
12	11%	3%	27%
13	8%		23%
14	5%		20%
15	3%		17%
16	1%		14%
17			12%
18			10%
19			8%
20			6%
21			4%
22			3%
23			2%
24			1%

**Table A:** Headend Equipment, Underground Cable Excluding Electronics, Aerial Cable Distribution Electronics, Subscriber Drops

**Table B:** Microwave Transmission/Receiving Equipment, Underground Cable Distribution Electronics, Fiber Optic Cable Electronics

**Table C:** Aerial Cable Excluding Electronics, Fiber Optic Cable Excluding Electronics

## VI. PROPOSED ORIGINAL COST MULTIPLIER SCHEDULES

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### • COMPUTER & PERIPHERAL EQUIPMENT

AGE	% GOOD
1	60%
2	44%
3	32%
4	24%
5	19%
6	15%
7	11%
8	10%
9	8%
10	6%
11	5%
12	5%
13	3%
14	3%
15	3%

### • IMPROVEMENTS

AGE	% GOOD
1	95%
2	90%
3	85%
4	80%
5	75%
6	70%
7	65%
8	60%
9	55%
10	50%
11	45%
12	40%
13	35%
14	30%
15	25%
16	20%
17	20%

## VI. PROPOSED ORIGINAL COST MULTIPLIER SCHEDULES

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### • MACHINERY & EQUIPMENT

AGE	% GOOD
1	85%
2	70%
3	63%
4	58%
5	54%
6	51%
7	49%
8	47%
9	45%
10	44%
11	42%
12	41%
13	40%
14	39%
15	38%
16	37%
17	36%
18	35%
19	34%
20	34%
21	33%
22	32%
23	32%
24	31%
25	30%
26	30%
27	29%
28	29%
29	28%
30	28%

## VI. PROPOSED ORIGINAL COST MULTIPLIER SCHEDULES

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- **COMPUTER CONTROLLED MACHINERY & EQUIPMENT**

AGE	% GOOD
1	94%
2	84%
3	75%
4	66%
5	59%
6	52%
7	47%
8	41%
9	37%
10	33%
11	29%
12	26%
13	23%
14	20%
15	18%
16	16%
17	14%
18	13%
19	11%
20	10%
21	9%
22	8%
23	7%
24	6%
25	6%
26	5%
27	4%
28	4%
29	4%
30	3%

## VI. PROPOSED ORIGINAL COST MULTIPLIER SCHEDULES

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### • FURNITURE & FIXTURES

AGE	% GOOD
1	91%
2	80%
3	69%
4	61%
5	53%
6	47%
7	42%
8	37%
9	33%
10	29%
11	27%
12	24%
13	22%
14	19%
15	17%
16	16%
17	14%
18	13%
19	12%
20	11%
21	10%
22	9%
23	8%
24	8%
25	7%
26	7%
27	6%
28	5%
29	5%
30	5%



## VI. PROPOSED ORIGINAL COST MULTIPLIER SCHEDULES

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- OFFICE MACHINES

AGE	% GOOD
1	83%
2	70%
3	63%
4	57%
5	52%
6	47%
7	44%
8	40%
9	37%
10	34%
11	32%
12	29%
13	27%
14	25%
15	23%
16	22%
17	20%
18	19%
19	17%
20	16%
21	15%
22	14%
23	13%
24	12%
25	11%
26	10%
27	10%
28	9%
29	8%
30	8%

## VI. PROPOSED ORIGINAL COST MULTIPLIER SCHEDULES

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- ELECTRONIC, VIDEO & TEST EQUIPMENT

AGE	% GOOD
1	89%
2	68%
3	58%
4	52%
5	47%
6	44%
7	40%
8	38%
9	35%
10	33%
11	31%
12	30%
13	28%
14	27%
15	25%
16	24%
17	23%
18	22%
19	21%
20	20%
21	19%
22	18%
23	17%
24	16%
25	16%
26	15%
27	14%
28	13%
29	13%
30	12%

## VI. PROPOSED ORIGINAL COST MULTIPLIER SCHEDULES

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- RESTAURANT EQUIPMENT

AGE	% GOOD
1	94%
2	78%
3	70%
4	63%
5	57%
6	53%
7	49%
8	45%
9	42%
10	39%
11	36%
12	33%
13	31%
14	29%
15	26%
16	25%
17	23%
18	21%
19	20%
20	18%
21	16%
22	15%
23	14%
24	12%
25	11%
26	10%
27	9%
28	8%
29	7%
30	6%

## VI. PROPOSED ORIGINAL COST MULTIPLIER SCHEDULES

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- **CONSUMER-COIN OPERATED EQUIPMENT**

AGE	% GOOD
1	92%
2	85%
3	77%
4	69%
5	61%
6	54%
7	46%
8	38%
9	30%
10	23%
11	15%
12	15%

- **CONSUMER-UTILIZED EQUIPMENT**

AGE	% GOOD
1	76%
2	53%
3	29%
4	5%
5	5%

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## VII. SUMMARY

This document is an independent comprehensive review, study and analysis of the current original cost multipliers for personal property. Our review revealed that the current multipliers were not substantially reflective of true cash value, as defined by law. Consequently, new personal property original cost multipliers were constructed.

The personal property original cost multiplier is a composite factor. The composite factor is the combination of a trending factor used for the purpose of developing a reproduction cost new (RCN) and the remaining economic life percentage, commonly referred to as the percent good after the deduction for depreciation (LD). The composite factor reduces the number of mathematical equations the assessor must calculate in order to arrive at an estimate of true cash value.

States and municipalities commonly use original cost multipliers as a tool and model for the valuation of personal property. Assessors are responsible for the valuation and assessment of thousands of properties annually. A model that is structured from market data provides a reliable tool for the assessor to estimate the value of property and to equitably assess properties. Properties that are unusual or unique may require the assessor to employ valuation skills that may be independent of the model.

Currently, the Michigan State Tax Commission recommends the use of seven original cost multiplier tables for assessors. Three of the tables are industry specific. Three of the tables are age-life based and one table is property type based. BDO Seidman, LLP constructed eleven proposed original cost multiplier schedules for use by Michigan assessors. All of the tables are property type based. They are:

- Cable Equipment (group of three tables)
- Computer & Peripheral Equipment
- Improvements
- Machinery & Equipment
- Computer Controlled Machinery & Equipment
- Furniture & Fixtures
- Office Machines
- Electronic, Video & Test Equipment
- Restaurant Equipment
- Consumer-Coin Operated Equipment
- Consumer-Utilized Equipment

This report is prepared only for the purpose stated herein. It was prepared in accordance with the specifications of the Michigan State Tax Commission. The fee for BDO Seidman, LLP is in no way influenced by the results of this review, study and analysis.

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## VIII. PROFESSIONAL QUALIFICATIONS

### • BDO Seidman, LLP

BDO Seidman, LLP is one of the nation's leading accounting, tax and consulting firms. Services range from assurance and tax to business and technology consulting services. BDO Seidman, LLP serves clients through more than 40 offices, and access to industry and technical resources is further enhanced through an alliance network of nearly 40 accounting and consulting organizations nationwide. As a member firm of BDO International, BDO Seidman leverages a global network of resources to serve clients abroad through more than 490 member firm offices in over 80 countries.

The Multistate Tax Group has over 40 full time professionals with significant experience in the valuation and study of personal property. This group performs hundreds of annual valuation projects.

### • Project Members

The project was staffed directly by BDO Seidman, LLP personnel and approved subcontractors.

BDO Seidman, LLP personnel included:

Paul A. Shanbrom, CPA, MST - Contract Administrator  
Lisa A. Hobart, ASA, PPS - Project Manager  
Robert C. Lucas, CPA, MBA  
John B. Maurice  
Joy A. Hornkohl  
Barbara J. Lambitz  
Michael P. Gould  
Barry J. Epstein, Ph.D., CPA  
Brian C. Bower

### • Subcontractors

BDO Seidman, LLP subcontracted portions of this project to skilled and experienced professionals. The subcontractors are:

Mr. Stewart M. Shipper, ASA, President  
Shipper Valuation Company, Inc.

Mr. Richard A. Southern, ASA, President  
Applied Research Consulting

Mr. Russ Hetz  
Consultant